

Appl. No. 10/502,490
Amdt. Dated August 16, 2005
Reply to Office Action of May 17, 2005

Attorney Docket No. 81864.0039
Customer No.: 26021

REMARKS

This application has been carefully reviewed in light of the Office Action dated May 17, 2005. Claims 1-17 remain in this application. New Claims 15-17 are added. Claims 1, 10, 11, and 17 are the independent Claims. Claims 1, 4, 7-9, and 11 have been amended. It is believed that no new matter is involved in the amendments or arguments presented herein. Reconsideration and entrance of the amendment in the application are respectfully requested.

Art-Based Rejections

Claims 1-4 and 7-11 were rejected under 35 U.S.C. § 102(b) over Japanese Patent Publication No. JP 06-069032 (Takanabe). Claim 6 was rejected under 35 U.S.C. § 103(a) over Takanabe in view of Japanese Patent Publication No. JP 02-143510 (Takada). Claims 12-14 were rejected under § 103(a) over Japanese Patent Publication No. JP 07-029732 (Saito) in view of Takanabe. Applicant respectfully traverses the rejections and submits that the claims herein are patentable in light of the clarifying amendments above and the arguments below.

The Saito Reference

Saito is directed to a thin film magnetic element having specified thickness of magnetic layer, thickness of conductive metal layer, and frequency of applied signal. (See, *Saito; Abstract, PURPOSE*). According to Saito, a silicon oxide film is formed on a silicon substrate. A silicon nitride film is formed on the silicon oxide film. A soft magnetic layer of 3-5um is formed on the silicon nitride film. A polyimide film is formed on the soft magnetic layer. An aluminum or copper film 10-20 times thicker than the soft magnetic layer is formed on the polyimide film. An operating

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signal 0.1-5 MHz is applied to the thin film magnetic element. (See, Saito; Abstract, CONSTITUTION).

The Takada Reference

Takada is directed to a high permeability magnetic material having a Fe layer having 110 plane, a FeCo layer disposed on the Fe layer, and a Co layer having a 101 plane disposed on the FeCo layer. (See, Takada; Abstract, PURPOSE). According to Takada, Fe and Co are formed based on *Co layer thickness / (Fe layer thickness + Co layer thickness) ≤ 0.8* . (See, Takada; Abstract, Constitution).

The Takanabe Reference

Takanabe is directed to a magnetic head having multilayer magnetic thin film. According to Takanabe, a multilayer film includes a Fe-N first layer, and a Co amorphous alloy second layer. (See, Takanabe; Abstract, PURPOSE and CONSTITUTION; Figure 1).

The Claims are Patentable Over the Cited References

The present application is generally directed to a magnetic thin film having high saturation magnetization and exhibits high permeability and a high quality factor Q in the high frequency band of GHz range. (See, Specification; Para. 1).

As defined by amended independent Claim 1, a high frequency magnetic thin film having a first layer having a T-L composition (here, T is Fe or FeCo, L is C and/or B) is provided. A second layer having a Co-based amorphous alloy arranged on either of the surfaces of said first layer is provided.

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Amended Independent Claims 1 and 11 are Patentable over
Takanabe

The applied references are not seen to disclose or suggest the above features of the present invention as defined by amended independent Claim 1. In particular, the applied references do not disclose or suggest, "a first layer comprising a T-L composition (here, T is Fe or FeCo, L is C and/or B)" as required by amended independent Claim 1.

Takanabe is directed to a multilayer magnetic thin film. According to Takanabe, the multilayer film includes a Fe-N first layer, and a Co amorphous alloy second layer. (See, *Takanabe; Abstract, PURPOSE and CONSTITUTION; Figure 1*). The thin film is heated, allowing N to diffuse from Fe-N layer to the Co amorphous alloy layer. Takanabe discloses Fe-N having property of weak bonding between Fe and N is ideal for the purpose. (See, *Takanabe; Para. 25 and 26*). Applicant notes Takanabe is silent with regard to C and/or B as the L element. Accordingly, Takanabe does not teach or even suggest, "a first layer comprising a T-L composition (here, T is Fe or FeCo, L is C and/or B)" as required by the amended independent Claim 1.

The ancillary Takada reference is not seen to remedy the above deficiency as is Takanabe.

In view of the foregoing, Applicant respectfully submits amended independent Claim 1 is patentable over the applied references. Claims 2-9, 15 depend directly or indirectly from amended independent Claim 1 and are patentable over the applied references for at least the same reasons as those discussed in connection with amended independent Claim 1.

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In addition, amended independent Claim 11 reciting, "a first layer comprising a T-L composition (here, T is Fe or FeCo, L is C and/or B)" is allowable for at least the same reasons as those discussed in connection with amended independent Claim 1.

Independent Claim 10 is Patentable over Takanabe

The applied reference is not seen to disclose or suggest the above features of the present invention as defined by independent Claim 10. In particular, the applied reference does not disclose or suggest, "a first layer which is mainly composed of Fe or FeCo, with the saturation magnetization of 16 kG (1.6 T) or more by itself, and said first layer is constituted with a columnar structure of 1.4 or less aspect ratio or an amorphous structure," as required by independent Claim 10. The applied reference does not disclose or suggest, "a second layer which is mainly composed of Co, having the properties by itself that the permeability is 1,000 or more (the measurement frequency: 10 MHz), the saturation magnetization is 10 kG (1.0 T) or more, and the resistivity is 100 $\mu\Omega$ cm or more," as required by independent Claim 10.

Takanabe discloses a multilayer magnetic thin film having a Fe-N first layer. The multilayer magnetic thin film has a coercive force of 2-100Oe and a saturation magnetic flux density of 0.9-1.6T before heat treatment. (*See, Takanabe; Para. 20*). After the heating treatment, the coercive force is 0-2Oe, and the saturation magnetic flux density of 0.8-0.85T. (*See, Takanabe; Para. 31*).

Applicant notes Takanabe is silent with regard to the saturation magnetization of the first layer, let alone a first layer having saturation magnetization of 16 kG (1.6 T) or more, as required by independent Claim 10.

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Moreover, Takanabe is silent with regard to a first layer being constituted with a columnar structure of 1.4 or less aspect ratio or an amorphous structure, as required by independent Claim 10. The present application discloses the first layer is constituted with column structure. The aspect ratio of the column structure is the ratio of the column length to the column width. (*See, Page 7, last line – Page 8, first line; Figures 2-4*).

Furthermore, Takanabe is silent with regard to a second layer which is mainly composed of Co, having the property by itself that the permeability being 1,000 or more (the measurement frequency: 10 MHz), as required by independent Claim 10.

Furthermore, Takanabe is silent with regard to a second layer which is mainly composed of Co, having property by itself the saturation magnetization being 10 kG (1.0 T) or more, as required by independent Claim 10.

Furthermore, Takanabe is silent with regard to a second layer which is mainly composed of Co, having property by itself the resistivity being 100 $\mu\Omega$ cm or more, as required by independent Claim 10.

In view of the foregoing, Applicant respectfully submits Takanabe cannot be said to anticipate the features as required by independent Claim 10. As such, reconsideration and withdrawal of the § 102(b) rejection are respectfully requested.

Claims 12 -14 are Patentable over Saito and Takanabe

The applied references are not seen to disclose or suggest the above features of the present invention as defined by amended independent Claim 11. In particular, Saito does not disclose or suggest, "said high frequency magnetic thin

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film is a multilayer film wherein a first layer comprising a T-L composition (here, T is Fe or FeCo, L is C and/or B) " as required by amended independent Claim 11 and Claim 12.

Saito discloses a coil having magnetic films disposed above and below. (*See, Saito; Figures 1(a) and 1(b)*). Applicant notes Saito does not teach or suggest a multilayer magnetic film as required by Claims 11 and 12. The Office recognizes the above deficiency of Saito and applies ancillary Takanabe reference to remedy the above. (*See, Office Action; Page 4, lines 7-15*).

However, as discerned above, Takanabe does not teach or suggest a first layer comprising a T-L composition (here, T is Fe or FeCo, L is C and/or B) as required by Claims 11 and 12. Accordingly, Takanabe cannot be said to remedy the deficiency of Saito.

In light of the foregoing, Claims 12 and 16 are patentable over the applied references. Claims 13 and 14 depend from Claim 12 and are patentable for at least the same reasons as those discussed in connection with Claim 12.

New Claim 17 is Patentable over Takanabe

The applied references are not seen to disclose or suggest the above features of the present invention as defined by independent Claim 17. In particular, Takanabe does not disclose or suggest, "wherein the real part (μ') of the complex permeability at 1 GHz is 400 or more," as required by Claim 17. Moreover, Takanabe does not disclose or suggest, "the quality factor Q (μ'/μ'') is 4 or more," as required by Claim 17.

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Takanabe discloses a multilayer magnetic thin film having a coercive force of 2-100Oe and a saturation magnetic flux density of 0.9-1.6T before heat treatment. (See, *Takanabe*; Para. 20). After the heating treatment, the coercive force is 0-20Oe, and the saturation magnetic flux density of 0.8-0.85T. (See, *Takanabe*; Para. 31).

Applicant notes Takanabe is silent with regard to the real part (μ') of the complex permeability at 1 GHz being 400 or more as required by independent Claim 17. Takanabe is also silent with regard to the quality factor Q (μ'/μ'') being 4 or more as required by Claim 17.

Moreover, Applicant notes Takanabe is directed to a magnetic head for VTR (video tape recorder) application. (See, *Takanabe*; *TECHNICAL FIELD*). It is well known in the Art that the magnetic head of a video tape recorder operates in the mega-Hz range. Accordingly, Takanabe cannot be said to anticipate nor to render obvious, "the real part (μ') of the complex permeability at 1 GHz is 400 or more," as required by independent Claim 17.

In light of the foregoing, Applicant respectfully submits independent Claim 17 is patentable over the applied references.

Conclusion

In view of the foregoing, it is respectfully submitted that the application is in condition for allowance. Reexamination and reconsideration of the application, as amended, are requested.

If for any reason the Examiner finds the application other than in condition for allowance, the Examiner is requested to call the undersigned attorney at the Los Angeles, California telephone number (213) 337-6809 to discuss the steps necessary for placing the application in condition for allowance.

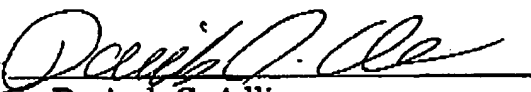
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If there are any fees due in connection with the filing of this response, please charge the fees to our Deposit Account No. 50-1314.

Respectfully submitted,
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